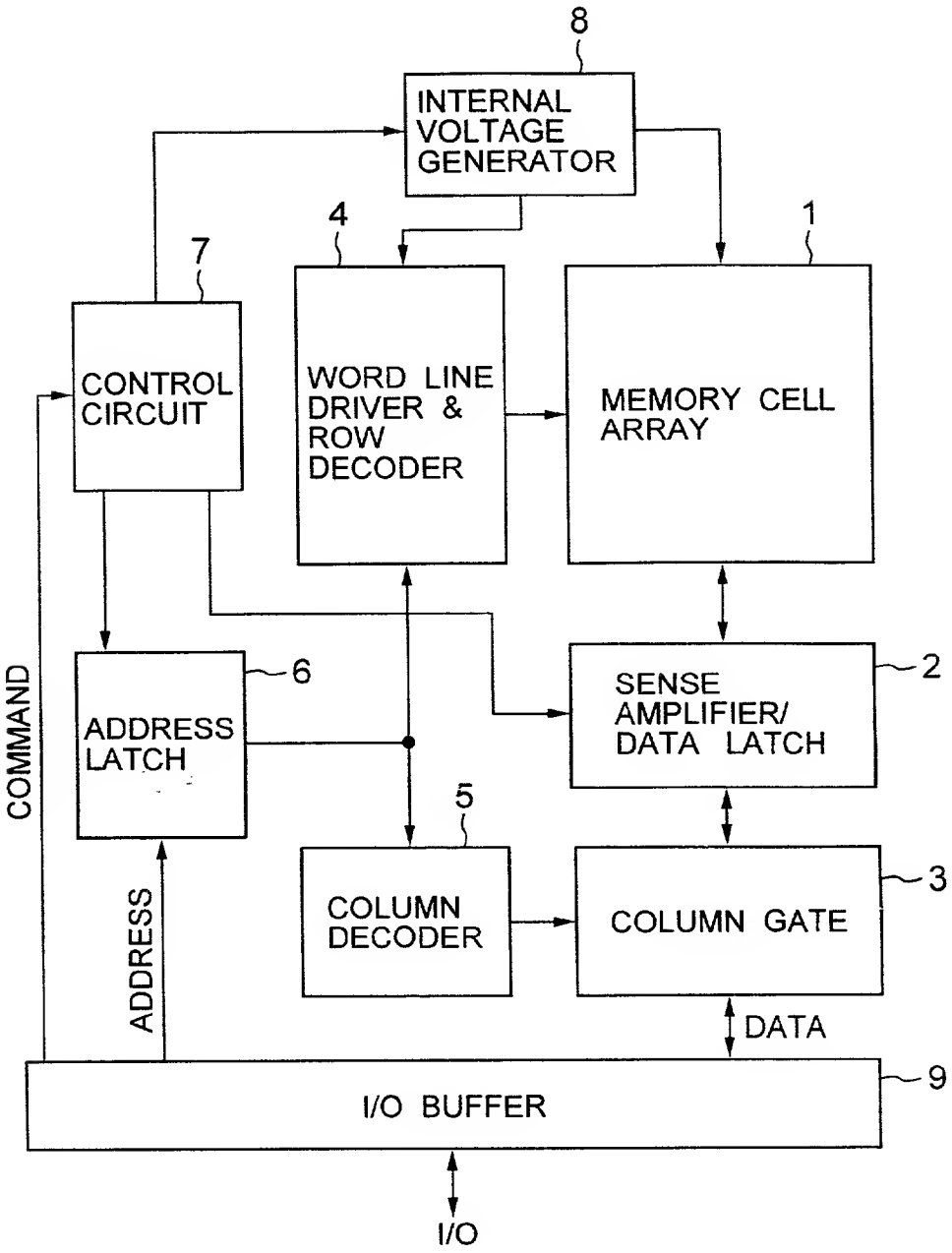
8
INTERNAL VOLTAGE GENERATOR
4
1
7
CONTROL CIRCUIT
WORD LINE DRIVER & ROW DECODER
MEMORY CELL ARRAY
COMMAND
6
ADDRESS LATCH
SENSE AMPLIFIER/ DATA LATCH
2
5
COLUMN DECODER
COLUMN GATE
3
ADDRESS
DATA
I/O BUFFER
9
I/O

FIG. 1

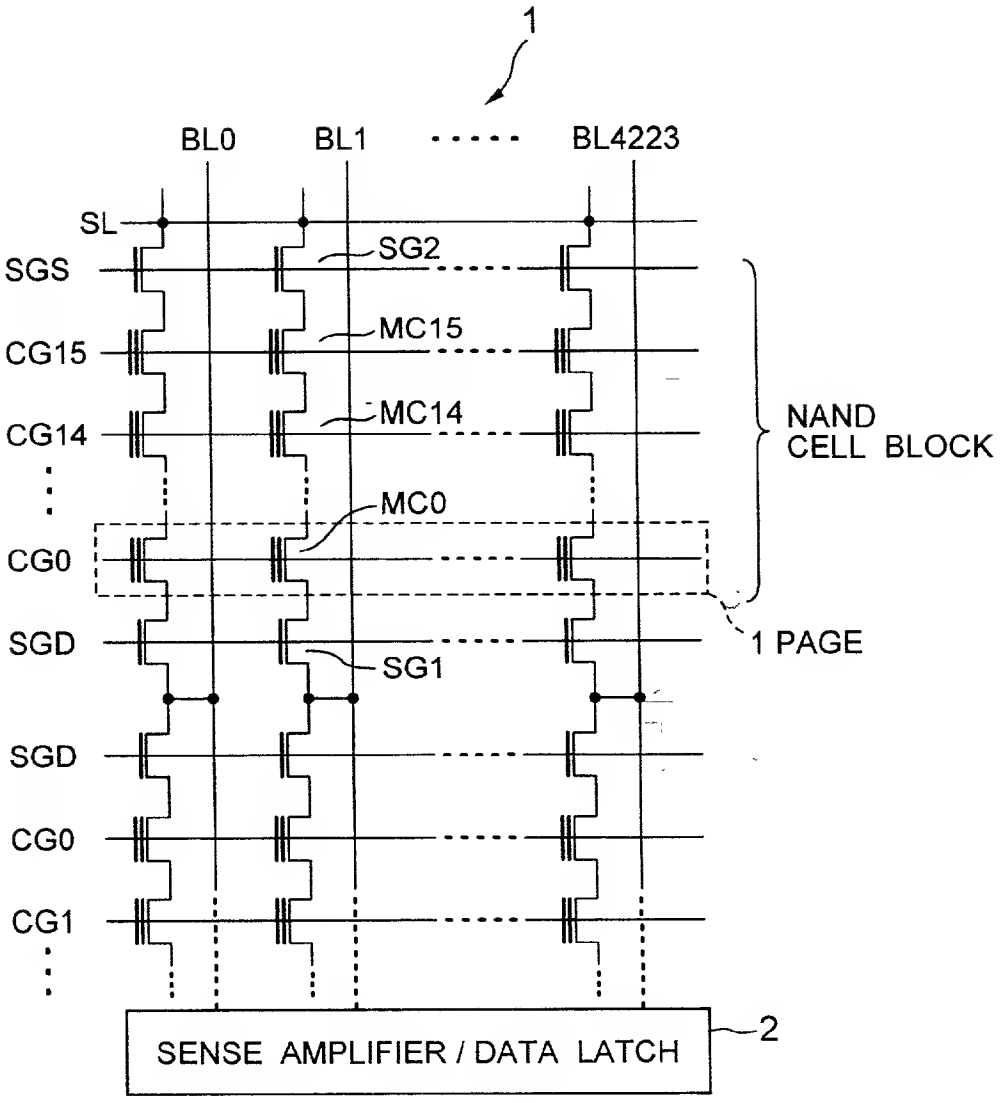
1
BL0
BL1
BL4223
SL
SGS
SG2
CG15
MC15
CG14
MC14
MC0
CG0
NAND
CELL BLOCK
1 PAGE
SGD
SG1
SGD
CG0
CG1
SENSE AMPLIFIER / DATA LATCH
2

FIG. 2

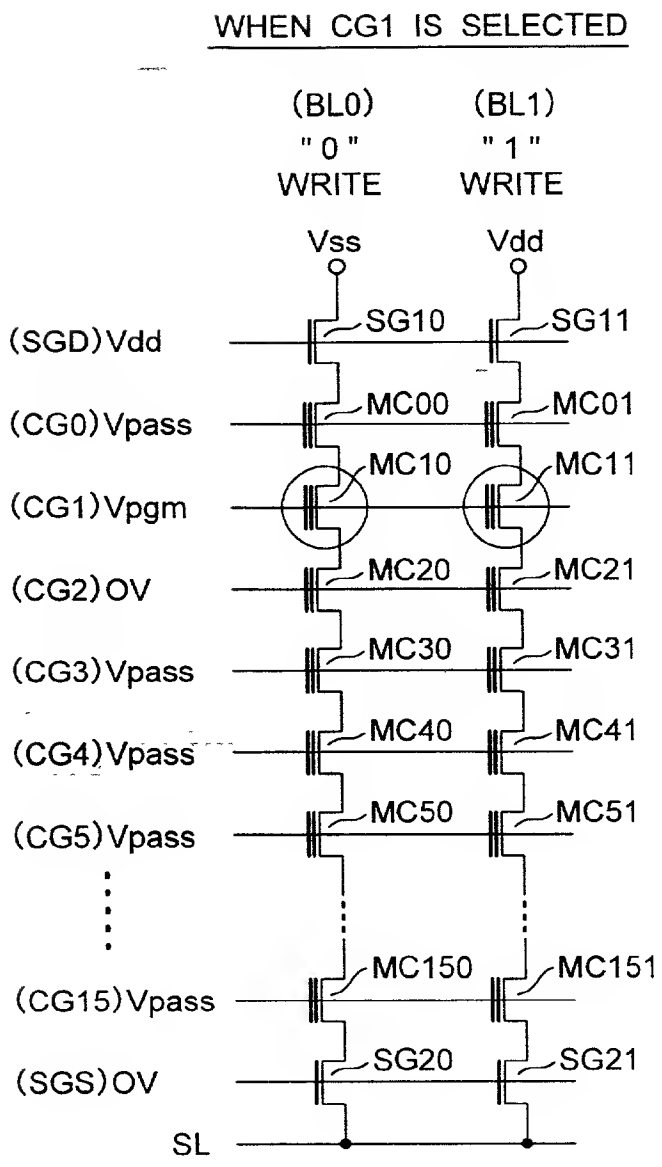
WHEN CG1 IS SELECTED
(BL0)
"0"
WRITE
(BL1)
"1"
WRITE
Vss
Vdd
(SGD)Vdd
SG10
SG11
(CG0)Vpass
MC00
MC01
(CG1)Vpgm
MC10
MC11
(CG2)OV
MC20
MC21
(CG3)Vpass
MC30
MC31
(CG4)Vpass
MC40
MC41
(CG5)Vpass
MC50
MC51
(CG15)Vpass
MC150
MC151
(SGS)OV
SG20
SG21
SL

FIG. 3

OBLON, SPIVAK, ET AL
DOCKET #: 220327US2
INV: Yasuhiko MATSUNAGA, et al.
SHEET 4 OF 12

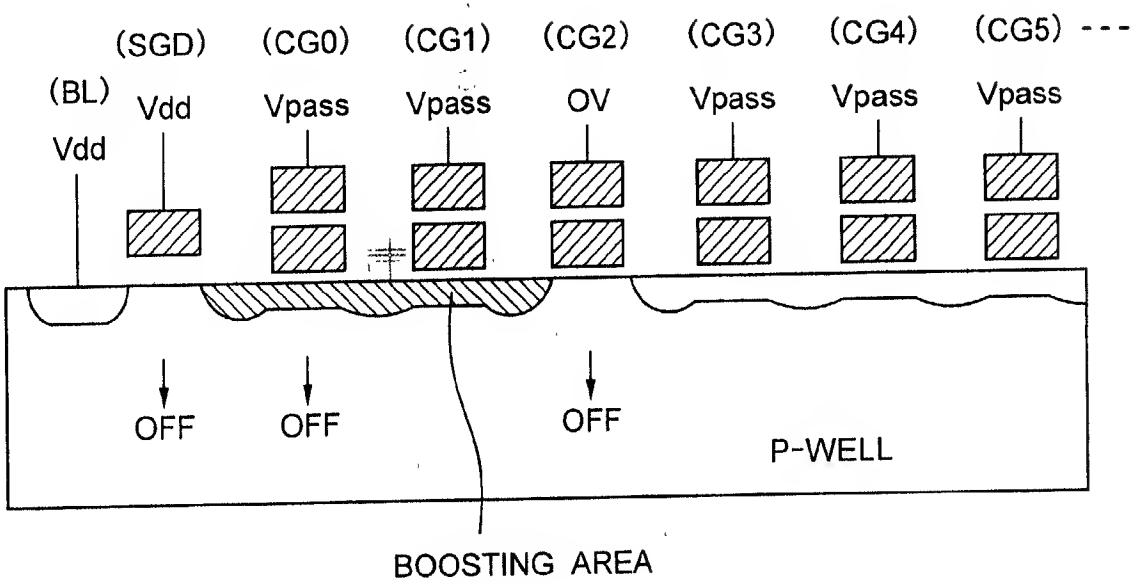

FIG. 4

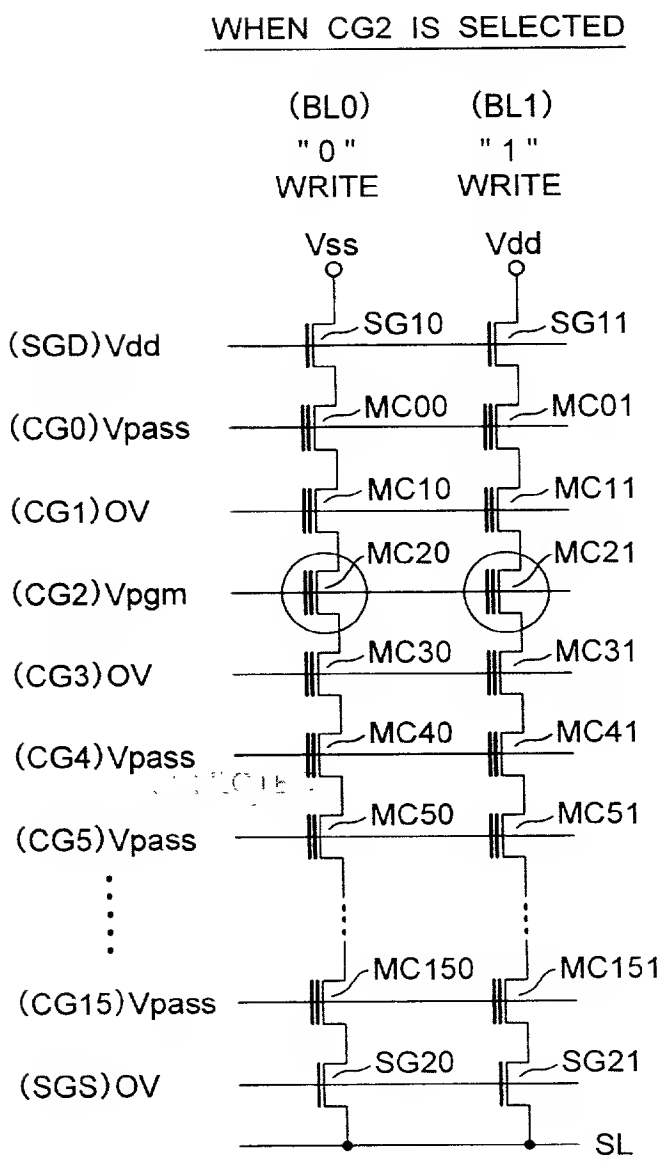
WHEN CG2 IS SELECTED
(BL0)
"0"
WRITE
(BL1)
"1"
WRITE
Vss
Vdd
(SGD)Vdd
SG10
SG11
(CG0)Vpass
MC00
MC01
(CG1)OV
MC10
MC11
(CG2)Vpgm
MC20
MC21
(CG3)OV
MC30
MC31
(CG4)Vpass
MC40
MC41
(CG5)Vpass
MC50
MC51
MC150
MC151
(CG15)Vpass
(SGS)OV
SG20
SG21
SL

FIG. 5

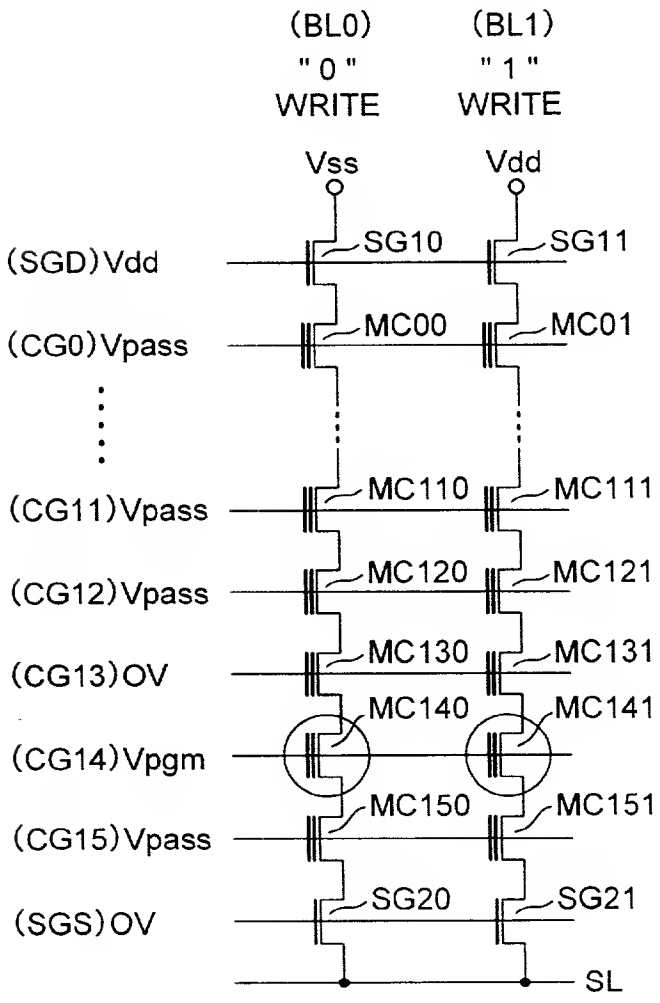
WHEN CG14 IS SELECTED
(BL0)
" 0 "
WRITE
(BL1)
" 1 "
WRITE
Vss
Vdd
(SGD)Vdd
SG10
SG11
(CG0)Vpass
MC00
MC01
(CG11)Vpass
MC110
MC111
(CG12)Vpass
MC120
MC121
(CG13)OV
MC130
MC131
MC140
MC141
(CG14)Vpgm
(CG15)Vpass
MC150
MC151
(SGS)OV
SG20
SG21
SL

FIG. 6

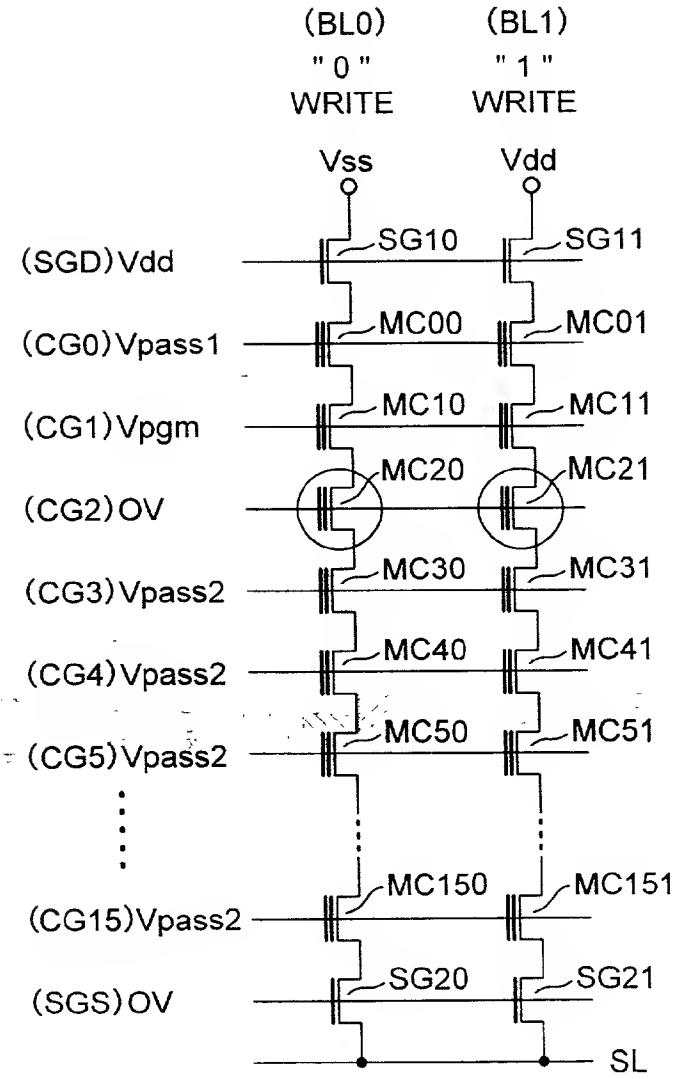
(BL0)
" 0 "
WRITE
(BL1)
" 1 "
WRITE
Vss
Vdd
(SGD)Vdd
SG10
SG11
(CG0)Vpass1
MC00
MC01
(CG1)Vpgm
MC10
MC11
(CG2)OV
MC20
MC21
(CG3)Vpass2
MC30
MC31
(CG4)Vpass2
MC40
MC41
(CG5)Vpass2
MC50
MC51
(CG15)Vpass2
MC150
MC151
(SGS)OV
SG20
SG21
SL

FIG. 7

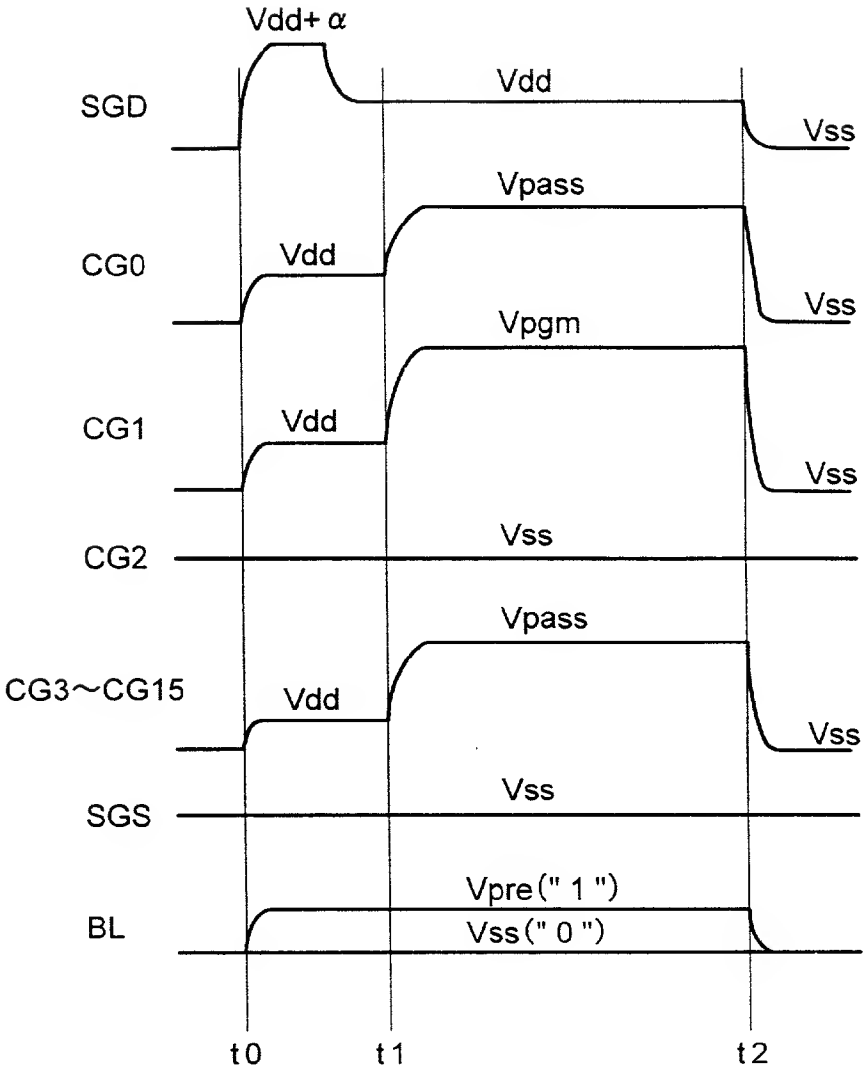
Vdd+ α
SGD
Vdd
Vss
Vpass
CG0
Vdd
Vss
Vpgm
CG1
Vdd
Vss
CG2
Vss
Vpass
CG3~CG15
Vdd
Vss
SGS
Vss
Vpre(" 1 ")
BL
Vss(" 0 ")
t0
t1
t2

FIG. 8

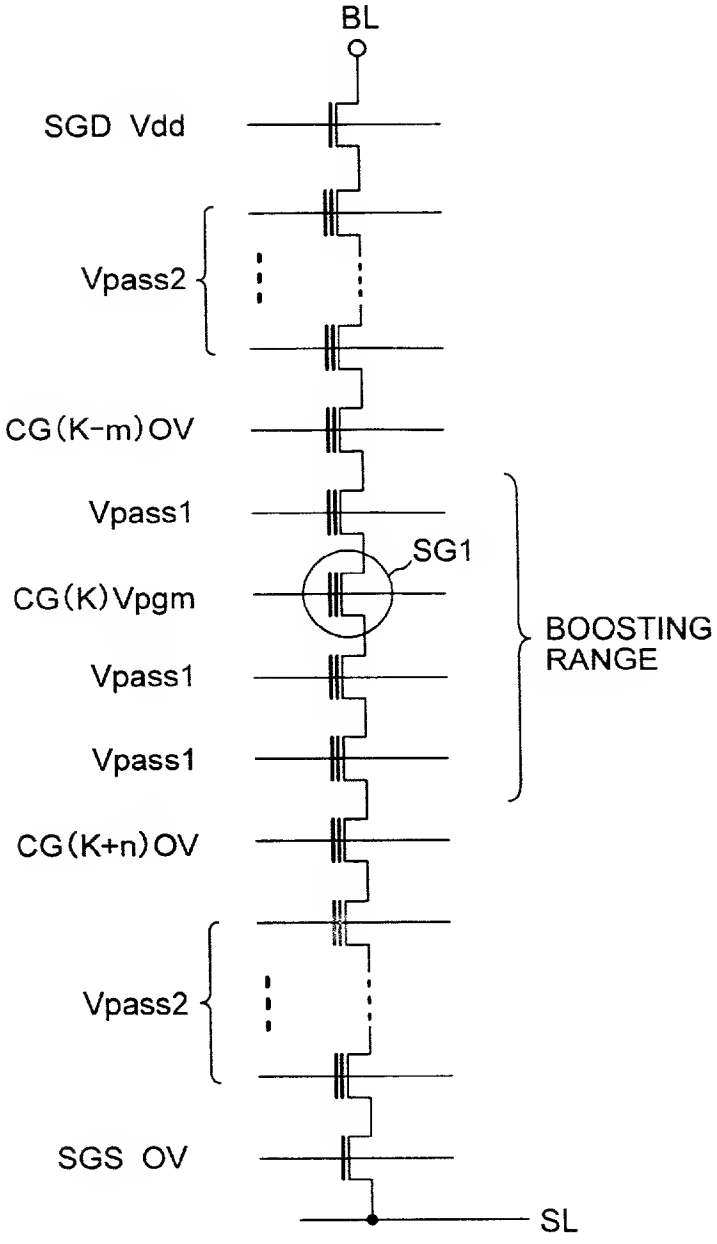
BL
SGD Vdd
Vpass2
CG(K-m)OV
Vpass1
SG1
CG(K)Vpgm
Vpass1
Vpass1
BOOSTING RANGE
CG(K+n)OV
Vpass2
SGS OV
SL

FIG. 9

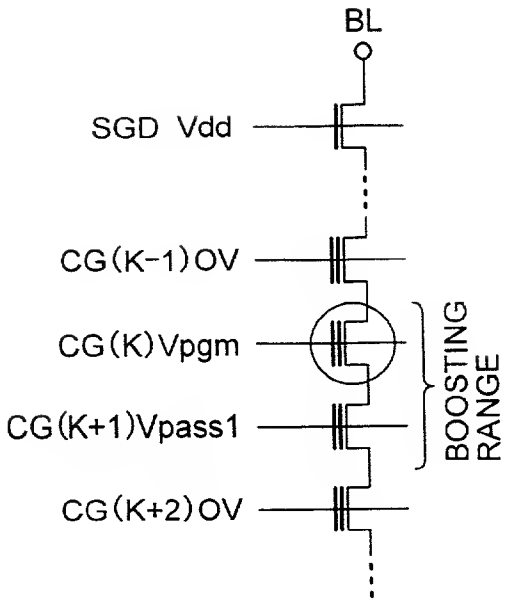

FIG. 10A

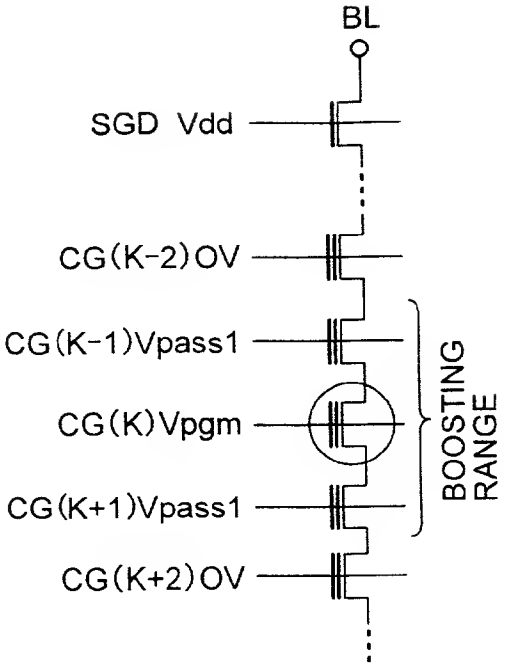

FIG. 10B

WHEN K=1 IS SELECTED

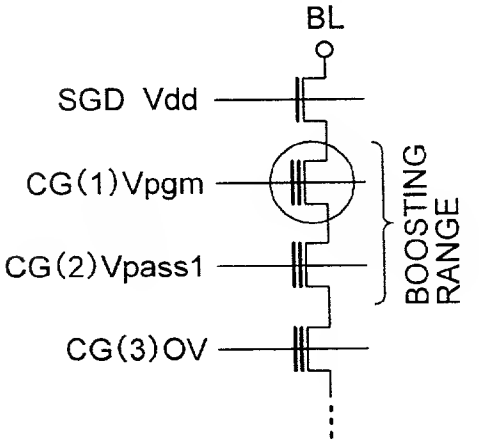

FIG. 11A

WHEN K=2 IS SELECTED

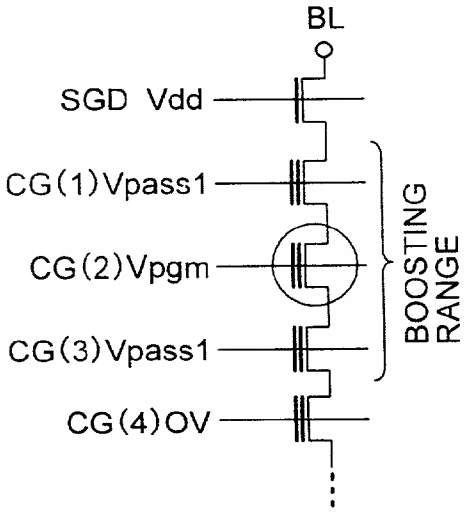

FIG. 11B

20080521-S652B2US2

OBLON, SPIVAK, ET AL
DOCKET #: 220327US2
INV: Yasuhiko MATSUNAGA, et al.
SHEET 11 OF 12

"1" WRITING BY SELECTING CG2

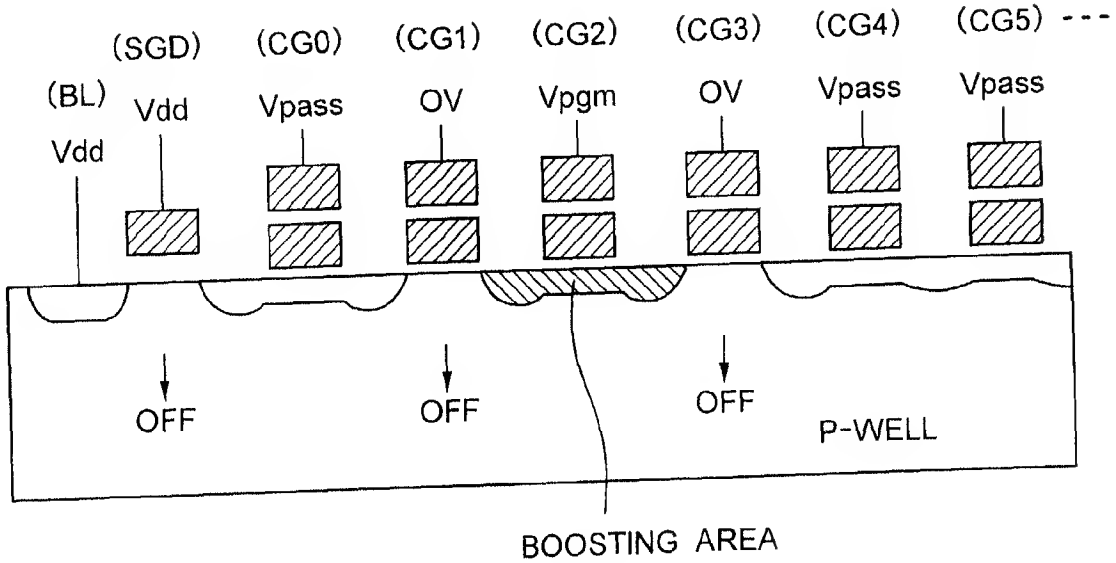

FIG. 12

20050056906A1

OBLON, SPIVAK, ET AL
DOCKET #: 220327US2
INV: Yasuhiko MATSUNAGA, et al.
SHEET 12 OF 12

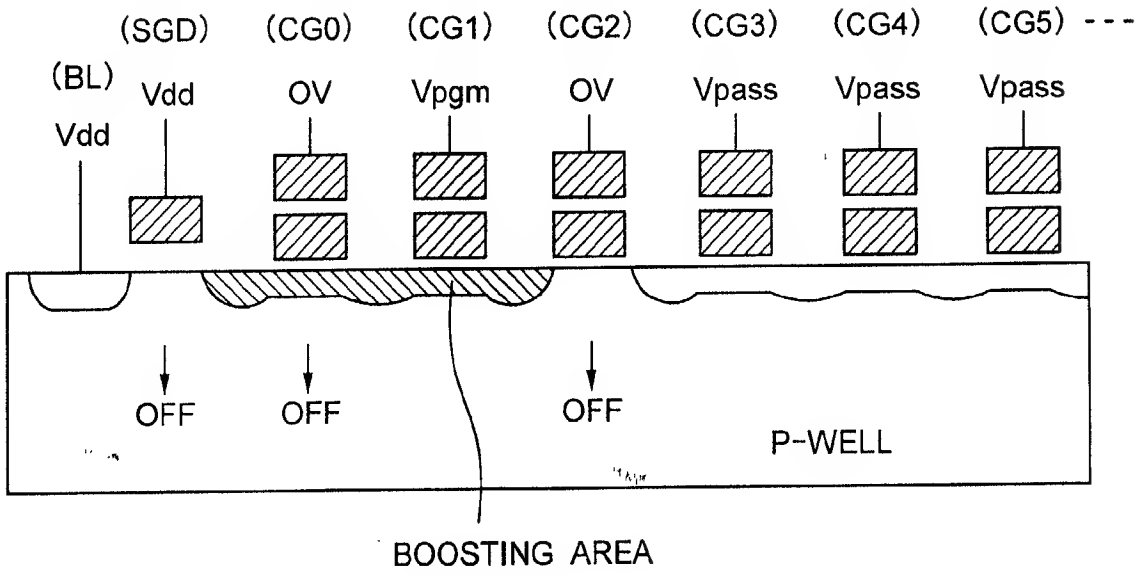

FIG. 13